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(19)日本国特許庁 (JP)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平8-321925

(43)公開日 平成8年(1996)12月3日

(51)Int.Cl*	識別記号	府内整理番号	F I	技術表示箇所
H 04 N 1/04	107		H 04 N 1/04	107Z
B 41 J 2/01			B 41 J 29/46	D
2/125			G 03 B 27/50	H
29/17			B 41 J 3/04	101Z
29/46				104K

審査請求 未請求 請求項の数 6 OL (全 6 頁) 最終頁に続く

(21)出願番号 特願平7-124871  
(22)出願日 平成7年(1995)5月24日

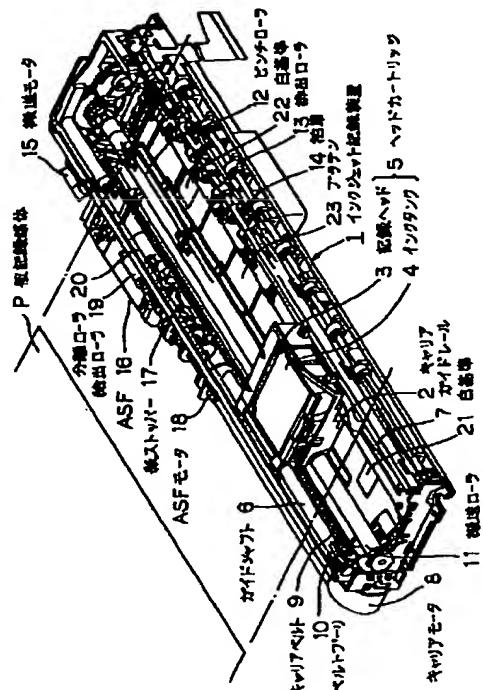
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(54)【発明の名称】 インクジェット記録装置

(57)【要約】

【目的】 インクミストによる白基準の汚れを検知する  
ことが可能な画像読み取り手段を備えたインクジェット  
記録装置を提供する。

【構成】 インクジェット記録装置のアラテン23上  
の、ヘッドカートリッジ5の記録ヘッド3による印字範  
囲外と印字範囲内にそれぞれ、ヘッドカートリッジ5と  
交換されるスキャナユニット(不図示)の読み取り基準  
となる白基準21、22が配置されている。



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## 【特許請求の範囲】

【請求項1】記録用紙に記録を行なうための記録手段と、記録用紙の画像を読み取るための光学的読み取り手段とを、前記記録用紙の搬送方向と直交する方向でかつ一直線上を往復移動するキャリアに対して搭載可能なインクジェット記録装置において、

前記光学的読み取り手段の読み取りレベルの基準となる白基準が、前記光学的読み取り手段と相対する前記キャリアの移動経路上に複数個配置されていることを特徴とするインクジェット記録装置。

【請求項2】前記キャリアに対して前記記録手段と前記光学的読み取り手段が交換可能になっていることを特徴とする請求項1に記載のインクジェット記録装置。

【請求項3】前記白基準が、前記キャリアに搭載される前記記録手段の印字範囲外と印字範囲内とに配設されたことを特徴とする請求項1または請求項2に記載のインクジェット記録装置。

【請求項4】前記光学的読み取り手段による印字範囲内外の白基準の読み取りレベルを比較することにより白基準の汚れを検出することを特徴とする請求項3に記載のインクジェット記録装置。

【請求項5】前記記録手段がインク吐出用の熱エネルギーを発生するための電気熱変換体を備えていることを特徴とする請求項1乃至4のいずれか1項に記載のインクジェット記録装置。

【請求項6】前記記録手段が前記電気熱変換体によって印加される熱エネルギーにより、インクに生ずる膜沸騰を利用して吐出口よりインクを吐出させることを特徴とする請求項5に記載のインクジェット記録装置。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】本発明は、インクジェット記録装置、特に画像読み取り機能を備えたインクジェット記録装置に関する。

## 【0002】

【従来の技術】従来のインクジェット記録装置には、被記録媒体への記録手段である記録ヘッドとインクタンクを一体化させたヘッドカートリッジを着脱自在に搭載するキャリアが設けられている。このキャリアは、被記録媒体と平行な面内で、かつ被記録媒体の搬送方向と直交する方向に往復移動可能とされたものである。

【0003】ヘッドカートリッジがキャリアに搭載されている場合は、キャリアの往復移動に同期して記録ヘッドがインクを記録信号に応じて吐出することにより、被記録媒体に記録が行われる。そして、前記キャリアの移動に伴い1行分の記録が行なわれる度に、被記録媒体が搬送されて次行記録が行なわれる。

【0004】また、前記キャリアにおいては、ヘッドカートリッジと同一の外観形状を持つ、原稿の画像を読み取るための光学的読み取り手段であるスキャナユニット

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が搭載可能となっている。

【0005】さらには、スキャナユニットに搭載した場合における画像入力レベルを校正するための基準である白基準が、キャリアの走査範囲内のどこかスキャナユニットのヘッド部と対向する位置に設けられている。

## 【0006】

【発明が解決しようとする課題】しかしながら、従来のインクジェット記録装置では、印字に用いられるインク滴以外に非常に微細なインク粒子（インクミスト）が空中に飛散し長期使用によって装置内が汚れてしまうという問題がある。そこで白基準も汚れてしまい使用者が注意して清掃する必要があるという問題があった。

【0007】本発明は、上記従来技術の問題点に鑑み、インクミストによる白基準の汚れを検知することが可能な画像読み取り手段を備えたインクジェット記録装置を提供することを目的とする。

## 【0008】

【課題を解決するための手段】上記目的を達成するため本発明は、記録用紙に記録を行なうための記録手段と、記録用紙の画像を読み取るための光学的読み取り手段とを、前記記録用紙の搬送方向と直交する方向でかつ一直線上を往復移動するキャリアに対して選択的に搭載可能なインクジェット記録装置において、前記光学的読み取り手段の読み取りレベルの基準となる白基準が、前記光学的読み取り手段と相対する前記キャリアの移動経路上に複数個配置されていることを特徴とする。

【0009】また、前記インクジェット記録装置において、前記キャリアに対して前記記録手段と前記光学的読み取り手段が交換可能になっていることを特徴とし、前記白基準が、前記キャリアに搭載される記録手段の印字範囲外と印字範囲内とに配設されたことを特徴とし、前記光学的読み取り手段による印字範囲内外の白基準の読み取りレベルを比較することにより白基準の汚れを検出することを特徴とするものである。

【0010】そして、前記記録手段がインク吐出用の熱エネルギーを発生するための電気熱変換体を備えており、前記電気熱変換体によって印加される熱エネルギーにより、インクに生ずる膜沸騰を利用して吐出口よりインクを吐出させることを特徴とする。

## 【0011】

【作用】上記のとおり構成された本発明では、光学的読み取り手段の読み取りレベルの基準となる白基準を、前記光学的読み取り手段と相対するキャリアの移動経路上に配置し、汚れ方の異なる複数の白基準を比較することにより白基準の汚れの状態を判別する。

## 【0012】

【実施例】以下、本発明の実施例について図面を参照して説明する。

【0013】(第1実施例) 図1は本発明のインクジェット記録装置の第1実施例を示す概略斜視図である。

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【0014】図1において、本実施例のインクジェット記録装置1は、記録手段を構成する記録ヘッド3とインクタンク4を一体化させたヘッドカートリッジ5を搭載するキャリア2を備えている。このキャリア2はガイドシャフト6とガイドレール7によってその軸方向に駆動可能に支持されている。前記キャリア2の駆動はキャリアモータ8がキャリアベルト9を支持するベルトブーリ10を駆動することで行われる。

【0015】また、この記録装置1は前記キャリア2の往復移動に同期して記録ヘッド3が駆動してインクを記録信号に応じて吐出することにより、記録用紙Pに記録を行うものである。すなわち、記録ヘッド3は微細な液体吐出口（オリフィス）、液路およびこの液路の一部に設けられたエネルギー作用部と、該作用部にある液体に作用させる液体形成エネルギーを発生する発生手段を備えている。発生手段は具体的には、発熱素子を有し、発熱素子によって発生した熱エネルギーによってインクを気化してバブルを発生させ、このバブルの膨張によってインク液滴を吐出させる。このような記録ヘッドをバルジェット記録ヘッドという。

【0016】前記キャリア2の軸方向の移動によって1行記録を行った後に記録用紙Pを搬送して次行記録を行うものであるが、この記録用紙Pの搬送は搬送ローラ11とこれに当接するピンチローラ12の回転体対と、排出ローラ13とこれに当接する拍車14との回転体対によって行われる。これら搬送用ローラの駆動は搬送モータ15によって行われる。

【0017】記録装置への給紙はASF16によって行われる。はじめに所定の枚数の用紙を紙ストッパ17に突き当たる位置までセットする。給紙信号によってASFモータ18は給紙ローラ19、分離ローラ20を駆動し用紙を記録装置本体へ1枚ずつ給紙する。

【0018】本実施例は、前記ヘッドカートリッジ5と互換性をもった外形形状を持ち、ヘッドカートリッジ5の代わりにキャリア2に搭載される光学的読み取り手段であるスキャナユニット（不図示）を備え、これにより記録用紙Pの代わりに搬送させる原稿の画像を読み取るものである。

【0019】また、経年変化による読み取りセンサや照明ランプのレベル変化に対応するため、明るさの基準を示す白基準21が印字範囲外の位置に、また白基準22が印字範囲内の位置に配置されている。

【0020】上述したインクジェット記録装置1にあっては、吐出したインクはそのほとんどが記録用紙Pに付着するが、ごくわずかな量が霧状となって記録ヘッド3近傍に漂っているので長い間使用するうちに記録装置内に付着する。印字範囲外の白基準21も同様にインクミストが付着し白基準のレベルが変わってしまう。

【0021】しかし、印字範囲内の白基準22は記録用紙Pの下側に配置されているため、インクミストによる

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汚れは少ない。そこで、白基準21と白基準22のレベルを比較して予め設定された値以上に白基準21が暗い場合にはインクミストによる汚れと判断し白基準の清掃を促す表示を行う。

【0022】一方インクジェット記録装置1はまた、紙ジャム等の事故の際に誤って記録用紙Pが無いにもかかわらず記録動作を行いアラテン23に印字してしまうことがごく稀にある。その際には白基準22が汚れてしまう。しかしこの時、もう一方の白基準21は印字範囲外にあるため白基準21に対しては印字は行われない。そこで、白基準21と白基準22のレベルを比較して予め設定された値以上に白基準22が暗い場合にはアラテン印字が行われたと判断して白基準の清掃を促す表示を行う。

【0023】このような各白基準の汚れを判別するための制御動作を図2のフローチャートに示す。

【0024】図2に示すように、まずステップS1で印字領域に用紙がセットされている場合は警報を発する（ステップS2）。ステップS1で用紙がセットされて

いない状態となると、白基準の汚れを検出するためにスキャナユニットを搭載したキャリアを移動範囲全体にわたって走査させ、印字領域の内外に設置されている白基準の各々を読み取る（ステップS3、S4）。

【0025】次いでステップS5で、読み取り出力Aと読み取り出力Bの差が設定値 $\alpha$ よりも大きいと判断した場合は印字範囲外の白基準が汚れていると判断して、印字範囲外の白基準のクリーニングを行うと判断する（ステップS7）まで警報を発する（ステップS6）。

【0026】ステップS7でクリーニングを行うと判断して、印字範囲外の白基準のクリーニングが実行される（ステップS8）。そして、クリーニングの実行が完了したかどうかその設定時間により判断する（ステップS9）。完了したら通常スタンバイモードとなる（ステップS10）。

【0027】一方、読み取り出力Aと読み取り出力Bの差が設定値 $\alpha$ よりも大きい値では無いとし、ステップS11で読み取り出力Aと読み取り出力Bの差が設定値 $-\alpha$ よりも小さいと判断した場合は印字範囲外内の白基準が汚れていると判断して、印字範囲内の白基準のクリーニングを行うと判断する（ステップS13）まで警報を発する（ステップS12）。その後は、上述のステップS8～S10までと同様に行う。

【0028】このように本実施例は、白基準を印字範囲の内外の場所にそれぞれ設置することにより、センサの読み取りレベルが変化しても白基準の汚れを判別することができる。

【0029】（第2実施例）次に、本発明の第2実施例について図面を参照して説明する。

【0030】図3は、本発明の第2実施例のアラテン清掃カートリッジを示す概略側面図である。

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【0031】図3において、プラテン清掃カートリッジ24はヘッドカートリッジと交換して用いるもので、ヘッドカートリッジの印字部にあたる部分にスポンジ等のインクを吸収する部材でできた清掃部材25が配設されている。清掃部材25はレバー26によって支持され、ばね27によって清掃カートリッジ内に納まるように付勢されている。前記レバー26の他端はカートリッジをキャリア2に装着した際にキャリア2壁面によって押されるようになっている。そこでキャリア2に装着しない場合には清掃部材25がカートリッジ内に収まり、カートリッジをキャリア2に装着すると清掃部材25が所定の位置に出てくる。

【0032】記録装置が2つの白基準を判定して清掃が必要であると判断するとヘッドカートリッジに代えて清掃カートリッジを装着するように促す表示を行う。

【0033】記録装置本体はプラテン清掃カートリッジ24を判別し、清掃モードを設定する。清掃モードではキャリア2を数回主走査方向へ往復駆動し、プラテン上に付着したインクを拭き取る。このモードでは、アラテン側に配されて記録ヘッドの印字部をキャッピングするキャップ保護のために印字範囲内ののみを走査する。

【0034】(第3実施例)次に、本発明の第3実施例について図面を参照して説明する。

【0035】図4は、本発明の第3の実施例に関する画像読み取りカートリッジの概略側面図である。

【0036】本実施例においては、図4に示すように画像読み取りカートリッジ29にプラテン清掃部材25が一体に設けられている。

【0037】本実施例の清掃部材25は画像読み取りセンサ31近傍に設けられ、ソレノイド30の働きにより先端が上下する。

【0038】本実施例においては画像読み取り装置にプラテン清掃器が一体に設けられているので、白基準判定でプラテンもしくは白基準が汚れていると判定される場合には紙なし時では自動的にプラテンの清掃を行うことができる。また、用紙がプリント内に存在する場合でもその旨の表示を行い操作者が用紙を取り除けばすぐに清掃することができる。

【0039】

【発明の効果】以上説明したように本発明は、光学的画像読み取り手段をインクジェット記録装置の記録手段と交換もしくはキャリア上に設けて構成されたインクジェット記録装置で、キャリアに搭載される記録手段の印字

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範囲内と印字範囲外とに少なくとも2つの白基準を分けた配設したことにより、印字による白基準の汚れの状態を判別することができる。

【図面の簡単な説明】

【図1】本発明のインクジェット記録装置の第1実施例を示す概略斜視図である。

【図2】白基準の汚れを判別するための制御動作を示すフローチャートである。

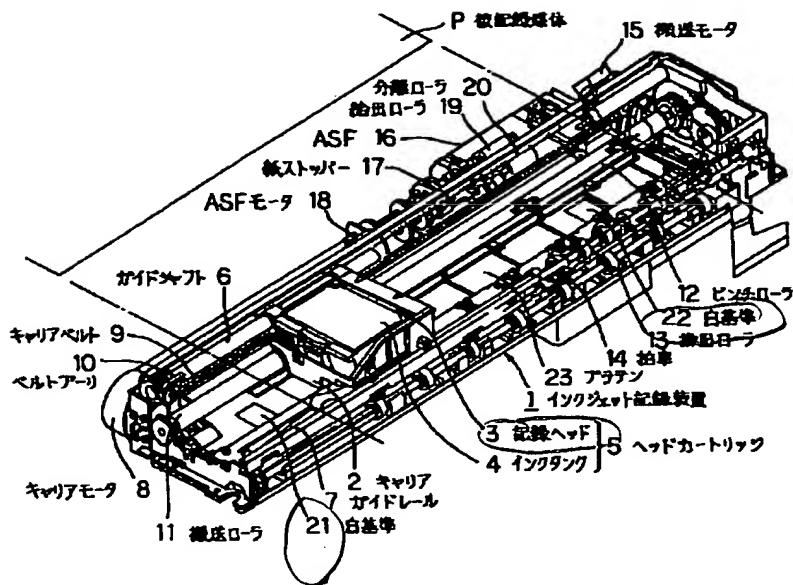
【図3】本発明の第2実施例のプラテン清掃カートリッジを示す概略側面図である。

【図4】本発明の第3の実施例に関する画像読み取りカートリッジの概略側面図である。

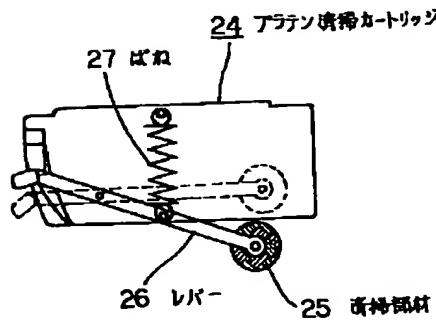
【符号の説明】

- |        |              |
|--------|--------------|
| 1      | インクジェット記録装置  |
| 2      | キャリア         |
| 3      | 記録ヘッド        |
| 4      | インクタンク       |
| 5      | ヘッドカートリッジ    |
| 6      | ガイドシャフト      |
| 7      | ガイドレール       |
| 8      | キャリアモータ      |
| 9      | キャリアベルト      |
| 10     | ベルトブーリ       |
| 11     | 搬送ローラ        |
| 12     | ピンチローラ       |
| 13     | 排出ローラ        |
| 14     | 拍車           |
| 15     | 搬送モータ        |
| 16     | ASF          |
| 17     | 紙ストッパー       |
| 18     | ASFモータ       |
| 19     | 給紙ローラ        |
| 20     | 分離ローラ        |
| 21, 22 | 白基準          |
| 23     | アラテン         |
| 24     | アラテン清掃カートリッジ |
| 25     | 清掃部材         |
| 26     | レバー          |
| 27     | ばね           |
| 29     | 画像読み取りカートリッジ |
| 30     | ソレノイド        |
| 31     | 読み取りセンサ      |

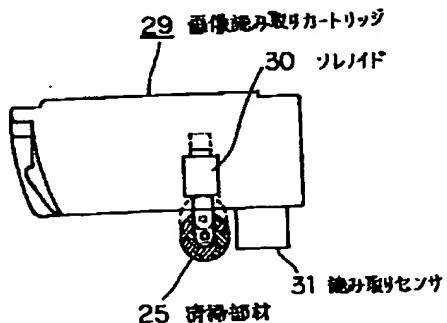
【図1】



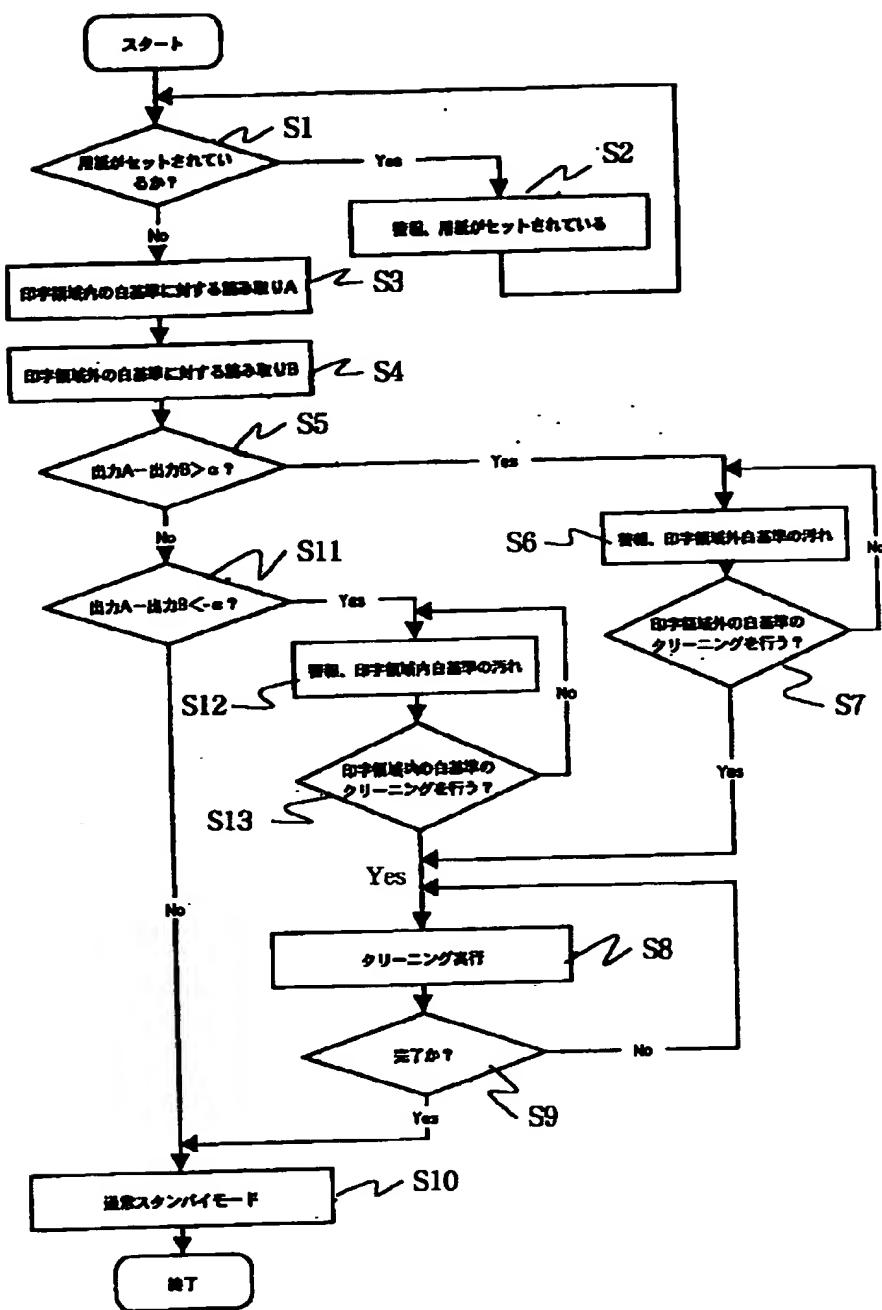
【図3】



【図4】



【図2】



フロントページの競き

(51) Int.Cl.<sup>6</sup>

G 03 B 27/50

識別記号

庁内整理番号

F I

B 41 J 29/00

技術表示箇所

J

**PAT-NO:** JP408321925A  
**DOCUMENT-IDENTIFIER:** JP 08321925 A  
**TITLE:** INK JET RECORDER  
**PUBN-DATE:** December 3, 1996

**INVENTOR-INFORMATION:**

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TOTSUGI, TOSHIHIKO	

**ASSIGNEE-INFORMATION:**

<b>NAME</b>	<b>COUNTRY</b>
CANON INC	N/A

**APPL-NO:** JP07124871

**APPL-DATE:** May 24, 1995.

**INT-CL** H04N001/04 , B41J002/01 , B41J002/125 , B41J029/17 ,  
**(IPC)** : B41J029/46 , G03B027/50

**ABSTRACT:**

**PURPOSE:** To obtain the ink jet recorder provided with an image read means by which dirt of a white reference board due to ink mist is sensed.

**CONSTITUTION:** White reference boards 21, 22 being read reference levels for a scanner unit (not shown) replaced with a head cartridge 5 are respectively arranged at the outside of a print range and in the inside of the print range by a recording head 3 of the head cartridge 5 on a platen 23 of the ink jet recorder. Thus, the dirty state of the two white reference boards is discriminated.

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CLAIMS

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[Claim(s)]

[Claim 1] The ink-jet recording device carry out that two or more white criteria which turn into the criteria of the reading level of the aforementioned optical reading means in the ink-jet recording device which can carry to the carrier which is the direction which intersects perpendicularly the record means for recording on a record form and the optical reading means for reading the picture of a record form with the conveyance direction of the aforementioned record form, and carries out both-way movement of the straight line top are arranged on the moving trucking of the aforementioned carrier which faces with the aforementioned optical reading means as the feature.

[Claim 2] The ink-jet recording device according to claim 1 characterized by the aforementioned record means and the aforementioned optical reading means being exchangeable to the aforementioned carrier.

[Claim 3] printing of an aforementioned record means by which the aforementioned white criteria are carried in the aforementioned carrier -- the ink-jet recording device according to claim 1 or 2 characterized by arranging that it is out of range in printing within the limits

[Claim 4] The ink-jet recording device according to claim 3 characterized by detecting the dirt of white criteria by comparing the reading level of the white criteria besides printing within the limits [ according to / the aforementioned optical reading means ].

[Claim 5] An ink-jet recording device given in the claim 1 characterized by having the electric thermal-conversion object for the aforementioned record means generating the heat energy for ink regurgitation, or any 1 term of 4.

[Claim 6] The ink-jet recording device according to claim 5 to which the aforementioned record means is characterized by making ink breathe out from a delivery with the heat energy impressed with the aforementioned electric thermal-conversion object using film boiling produced in ink.

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to an ink-jet recording device, especially the ink-jet recording device equipped with the picture reading function.

[0002]

[Description of the Prior Art] The carrier carried free [ attachment and detachment of the head cartridge which made the recording head which is a record means to a record medium-ed, and the ink tank unify ] is formed in the conventional ink-jet recording device. This carrier is in a field parallel to a record medium-ed, and both-way movement of it in the conveyance direction of a record medium-ed and the direction which intersects perpendicularly is enabled.

[0003] When the head cartridge is carried in the carrier, and a recording head carries out the regurgitation of the ink according to a record signal synchronizing with both-way movement of a carrier, record is performed to a record medium-ed. And whenever record for one line is performed with movement of the aforementioned carrier, a record medium-ed is conveyed, and the following line record is performed.

[0004] Moreover, in the aforementioned carrier, the scanner unit which is an optical reading means with the same appearance configuration as a head cartridge for reading the picture of a manuscript can be carried.

[0005] Furthermore, the white criteria which are the criteria for proofreading the picture input level at the time of carrying in a scanner unit are prepared in the head section of the somewhere scanner unit in the scanning zone of a carrier, and the position which counters.

[0006]

[Problem(s) to be Solved by the Invention] However, in the conventional ink-jet recording device, an ink particle (ink Myst) very detailed in addition to the ink drop used for printing disperses in the air, and there is a problem that the inside of equipment will become dirty by long-term use. Then, white criteria also became dirty and there was a problem that a user needed to clean carefully.

[0007] this invention aims at offering the ink-jet recording device equipped with the picture reading means which can detect the dirt of the white criteria by ink Myst in view of the trouble of the above-mentioned conventional technology.

[0008]

[Means for Solving the Problem] The record means for this invention recording on a record form, in order to attain the above-mentioned purpose, Are the direction which intersects perpendicularly the optical reading means for reading the picture of a record form with the conveyance direction of the aforementioned record form, and a straight line top is alternatively set to the ink-jet recording device which can be carried to the carrier which carries out both-way movement. The white criteria used as the criteria of the reading level of the aforementioned optical reading means are characterized by arranging more than one on the moving trucking of the aforementioned carrier which faces the aforementioned optical reading means.

[0009] Moreover, in the aforementioned ink-jet recording device, it is characterized by the aforementioned record means and the aforementioned optical reading means being exchangeable to the aforementioned carrier. printing of a record means by which the aforementioned white criteria are carried in the aforementioned carrier -- it is characterized by arranging that it is out of range in printing within the limits, and is characterized by detecting the dirt of white criteria by comparing the reading level of the white criteria besides printing within the limits [ according to / the aforementioned optical reading means ]

[0010] And it has the electric thermal-conversion object for the aforementioned record means generating the heat energy for ink regurgitation, and is characterized by making ink breathe out from a delivery with the heat energy impressed with the aforementioned electric thermal-conversion object using film boiling produced in ink.

[0011]

[Function] In this invention constituted as above-mentioned, the state of the dirt of white criteria is distinguished by comparing two or more white criteria that arrange the white criteria used as the criteria of the reading level of an optical reading means on the moving trucking of the carrier which faces the aforementioned optical reading means, and how to become dirty differs.

[0012]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

[0013] (The 1st example) Drawing 1 is the outline perspective diagram showing the 1st example of the ink-jet recording device of this invention.

[0014] In drawing 1, the ink-jet recording device 1 of this example is equipped with the carrier 2 which carries the head cartridge 5 which made the recording head 3 which constitutes a record means, and the ink tank 4 unify. This carrier 2 is supported by the guide shaft 6 and the guide rail 7 possible [ sliding of the shaft orientations ]. The drive of the aforementioned carrier 2 is performed by driving the belt pulley 10 with which the carrier motor 8 supports the carrier belt 9.

[0015] Moreover, this recording device 1 records on the record form P by a recording head's 3 driving synchronizing with both-way movement of the aforementioned carrier 2, and carrying out the regurgitation of the ink according to a record signal. That is, the recording head 3 is equipped with a generating means to generate the liquid formation energy made to act on the liquid in the energy operation section prepared in a detailed liquid delivery (orifice), a liquid route, and a part of this liquid route, and this operation section. A generating means has a heater element, evaporates ink with the heat energy generated by the heater element, generates a bubble, and makes an ink drop specifically breathe out by expansion of this bubble. Such a recording head is called bubble jet recording head.

[0016] Although the record form P is conveyed and the following line record is performed after movement of the shaft orientations of the aforementioned carrier 2 performs one-line record, conveyance of this record form P is performed by the body-of-revolution pair of the pinch roller 12 which contacts the conveyance roller 11 and this, and the body-of-revolution pair with the spur 14 which contacts the eccentric roller 13 and this. The drive of the roller for these conveyances is performed by the conveyance motor 15.

[0017] Feeding to a recording device is performed by ASF16. The form of predetermined number of sheets is first set to the position collided against the paper stopper 17. With a feed signal, the ASF motor 18 drives the feed roller 19 and the separation roller 20, and feeds one sheet of form at a time to a recording device main part.

[0018] this example has an appearance configuration with the aforementioned head cartridge 5 and compatibility, is equipped with the scanner unit (un-illustrating) which is the optical reading means carried in a carrier 2 instead of a head cartridge 5, and reads the picture of the manuscript made by this to convey instead of the record form P.

[0019] Moreover, since it corresponds to the level change of a reading sensor and a lighting lamp by secular change, the white criteria 21 which show the criteria of a luminosity are arranged in the position besides the printing range again at the position of white criteria's 22 printing within the limits.

[0020] If it is in the ink-jet recording device 1 mentioned above, although the most adheres to the record

form P, since very few amounts become fog-like and are drifting to about three recording head, while having used the breathed-out ink for a long time, it adheres in a recording device. Ink Myst will adhere similarly and the white criteria 21 besides the printing range will also change a white reference level. [0021] However, since the white criteria 22 of printing within the limits are arranged at the record form P bottom, the dirt by ink Myst has them. [ few ] Then, the display which judges it beyond the value which compared the level of the white criteria 21 and the white criteria 22, and was set up beforehand as the dirt by ink Myst, and urges cleaning of white criteria to it when the white criteria 21 are dark is performed.

[0022] On the other hand, although the ink-jet recording device 1 does not have the record form P accidentally in case of the accident of a paper jam etc., record operation is performed and it has printed very rarely to the platen 23 again. In that case, the white criteria 22 will become dirty. However, at this time, since another white criteria 21 are out of the printing range, printing is not performed to the white criteria 21. Then, beyond the value which compared the level of the white criteria 21 and the white criteria 22, and was set up beforehand, when the white criteria 22 are dark, the display to which it judges that platen printing was performed and cleaning of white criteria is urged is performed.

[0023] The control action for distinguishing the dirt of such each white criteria is shown in the flow chart of drawing 2.

[0024] An alarm is emitted, when the form is first set to the printing area at Step S1, as shown in drawing 2 (Step S2). If it will be in the state where the form is not set at Step S1, in order to detect the dirt of white criteria, the carrier which carried the scanner unit will be made to scan over the whole moving range, and each of the white criteria currently installed within and without the printing area will be read (Step S3, S4).

[0025] Subsequently, an alarm is emitted until it judges that the white criteria outside a printing area are dirty when it reads with the reading output A and it is judged at Step S5 that the difference of Output B is larger than the set point alpha, and it judges [ cleaning the white criteria outside a printing area, and ] (Step S7) (Step S6).

[0026] It judges [ cleaning at Step S7, and ], and cleaning of the white criteria outside a printing area is performed (Step S8). And it judges [ whether execution of cleaning was completed, and ] by the setup time (step S9). If it completes, it will usually become a standby mode (Step S10).

[0027] An alarm is emitted until it judges [ judging that the white criteria in the outside of a printing area are dirty when presuppose that there is nothing, it reads at Step S11, it reads with Output A and it is judged that the difference of Output B is smaller than set point-alpha, and cleaning the white criteria in a printing area by on the other hand reading with the reading output A, with a value with the larger difference of Output B than the set point alpha,, and ] (Step S13) (Step S After that, it carries out similarly even with the above-mentioned steps S8-S10.

[0028] Thus, by installing white criteria in the internal and external place of the printing range, respectively, this example can distinguish the dirt of white criteria, even if the reading level of a sensor changes.

[0029] (The 2nd example) Next, the 2nd example of this invention is explained with reference to a drawing.

[0030] Drawing 3 is the outline side elevation showing the platen cleaning cartridge of the 2nd example of this invention.

[0031] cleaning completed in the member which absorbs ink, such as sponge, into the portion which exchanges the platen cleaning cartridge 24 for a head cartlidge, uses it in drawing 3, and is equivalent to the printing section of a head cartlidge -- the member 25 is arranged cleaning -- a member 25 is supported by the lever 26, and it is energized so that it may be settled in a cleaning cartridge with a spring 27 When the other end of the aforementioned lever 26 equips a carrier 2 with a cartridge, it is pushed by carrier 2 wall surface. then -- the time of not equipping a carrier 2 -- cleaning -- if a member 25 is settled in a cartridge and equips a carrier 2 with a cartridge -- cleaning -- a member 25 comes out to a position

[0032] If a recording device judges two white criteria and judges that cleaning is required, the display

urged that it replaces with a head cartridge and equips with a cleaning cartridge will be performed. [0033] A recording device main part distinguishes the platen cleaning cartridge 24, and sets up cleaning mode. In cleaning mode, the both-way drive of the carrier 2 is carried out to main scanning direction several times, and the ink which adhered on the platen is wiped off. In this mode, only printing within the limits is scanned for the cap protection which is allotted to a platen side and carries out capping of the printing section of a recording head.

[0034] (The 3rd example) Next, the 3rd example of this invention is explained with reference to a drawing.

[0035] Drawing 4 is the outline side elevation of the picture reading cartridge about the 3rd example of this invention.

[0036] this example is shown in drawing 4 -- as -- the picture reading cartridge 29 -- platen cleaning -- the member 25 is formed in one

[0037] cleaning of this example -- a member 25 is formed in about 31 picture reading sensor, and a nose of cam goes up and down it by work of a solenoid 30

[0038] Since the platen cleaning machine is formed in the picture reader in this example at one, when being judged with a platen or white criteria being dirty from a white criteria judging, in the time of paper nothing, a platen can be cleaned automatically. Moreover, even when a form exists in a printer, a display to that effect can be immediately cleaned, if a deed operator removes a form.

[0039]

[Effect of the Invention] printing within the limits of the record means which this invention is the ink-jet recording device constituted by establishing an optical picture reading means on the record means of an ink-jet recording device, exchange, or a carrier as explained above, and is carried in a carrier, and printing -- the state of the dirt of the white criteria by printing can be distinguished by having been alike in it being out of range, and having divided and arranged at least two white criteria

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TECHNICAL FIELD

---

[Industrial Application] this invention relates to an ink-jet recording device, especially the ink-jet recording device equipped with the picture reading function.

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PRIOR ART

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[Description of the Prior Art] The carrier carried free [ attachment and detachment of the head cartridge which made the recording head which is a record means to a record medium-ed, and the ink tank unify ] is formed in the conventional ink-jet recording device. This carrier is in a field parallel to a record medium-ed, and both-way movement of it in the conveyance direction of a record medium-ed and the direction which intersects perpendicularly is enabled.

[0003] When the head cartridge is carried in the carrier, record is performed to a record medium-ed by \*\*\*\*\* to which a recording head breathes out ink according to a record signal synchronizing with both-way movement of a carrier. And whenever record for one line is performed with movement of the aforementioned carrier, a record medium-ed is conveyed, and the following line record is performed.

[0004] Moreover, in the aforementioned carrier, the scanner unit which is an optical reading means with the same appearance configuration as a head cartridge for reading the picture of a manuscript can be carried.

[0005] Furthermore, the white criteria which are the criteria for proofreading the picture input level at the time of carrying in a scanner unit are prepared in the head section of the somewhere scanner unit in the scanning zone of a carrier, and the position which counters.

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EFFECT OF THE INVENTION

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[Effect of the Invention] printing within the limits of the record means which this invention is the ink-jet recording device constituted by establishing an optical picture reading means on the record means of an ink-jet recording device, exchange, or a carrier as explained above, and is carried in a carrier, and printing -- the state of the dirt of the white criteria by printing can be distinguished by having been alike in it being out of range, and having divided and arranged at least two white criteria

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, in the conventional ink-jet recording device, an ink particle (ink Myst) very detailed in addition to the ink drop used for printing disperses in the air, and there is a problem that the inside of equipment will become dirty by long-term use. Then, white criteria also became dirty and there was a problem that a user needed to clean carefully.

[0007] this invention aims at offering the ink-jet recording device equipped with the picture reading means which can detect the dirt of the white criteria by ink Myst in view of the trouble of the above-mentioned conventional technology.

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**MEANS**

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[Means for Solving the Problem] The record means for this invention recording on a record form, in order to attain the above-mentioned purpose, Are the direction which intersects perpendicularly the optical reading means for reading the picture of a record form with the conveyance direction of the aforementioned record form, and a straight line top is alternatively set to the ink-jet recording device which can be carried to the carrier which carries out both-way movement. The white criteria used as the criteria of the reading level of the aforementioned optical reading means are characterized by arranging more than one on the moving trucking of the aforementioned carrier which faces the aforementioned optical reading means.

[0009] Moreover, in the aforementioned ink-jet recording device, it is characterized by the aforementioned record means and the aforementioned optical reading means being exchangeable to the aforementioned carrier. printing of a record means by which the aforementioned white criteria are carried in the aforementioned carrier -- it is characterized by arranging that it is out of range in printing within the limits, and is characterized by detecting the dirt of white criteria by comparing the reading level of the white criteria besides printing within the limits [ according to / the aforementioned optical reading means ]

[0010] And it has the electric thermal-conversion object for the aforementioned record means generating the heat energy of ink \*\*\*\*\*, and is characterized by making ink breathe out from a delivery with the heat energy impressed with the aforementioned electric thermal-conversion object using film boiling produced in ink.

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OPERATION

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[Function] In this invention constituted as above-mentioned, the state of the dirt of white criteria is distinguished by comparing two or more white criteria that arrange the white criteria used as the criteria of the reading level of an optical reading means on the moving trucking of the carrier which faces the aforementioned optical reading means, and how to become dirty differs.

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EXAMPLE

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[Example] Hereafter, the example of this invention is explained with reference to a drawing.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is the outline perspective diagram showing the 1st example of the ink-jet recording device of this invention.

[Drawing 2] It is the flow chart which shows the control action for distinguishing the dirt of white criteria.

[Drawing 3] It is the outline side elevation showing the platen cleaning cartridge of the 2nd example of this invention.

[Drawing 4] It is the outline side elevation of the picture reading cartridge about the 3rd example of this invention.

[Description of Notations]

1 Ink-Jet Recording Device

2 Carrier

3 Recording Head

4 Ink Tank

5 Head Cartlidge

6 Guide Shaft

7 Guide Rail

8 Carrier Motor

9 Carrier Belt

10 Belt Pulley

11 Conveyance Roller

12 Pinch Roller

13 Eccrisis Roller

14 Spur

15 Conveyance Motor

16 ASF

17 Paper Stopper

18 ASF Motor

19 Feed Roller

20 Separation Roller

21 22 White criteria

23 Platen

24 Platen Cleaning Cartridge

25 Cleaning -- Member

26 Lever

27 Spring

29 Picture Reading Cartridge

30 Solenoid

### 31 Reading Sensor

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[Translation done.]

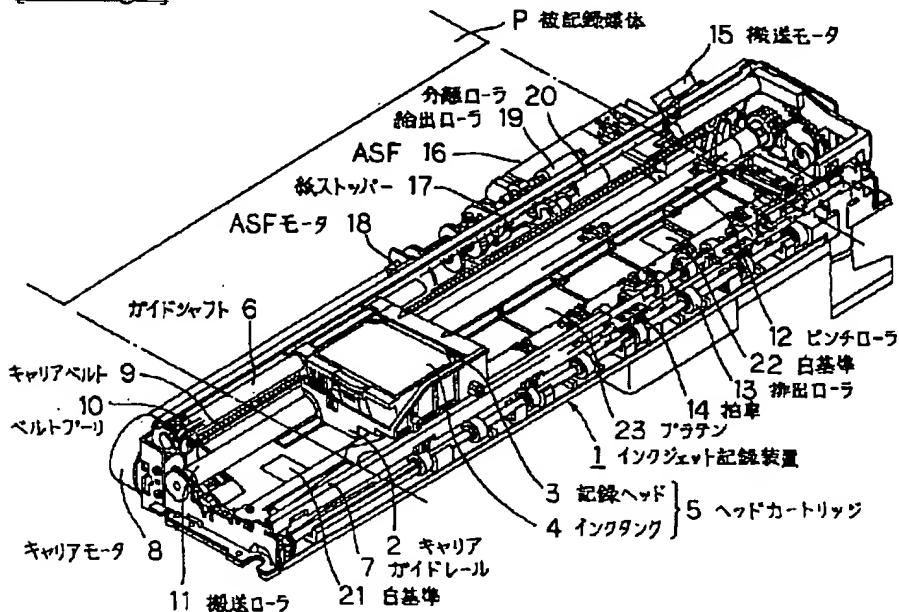
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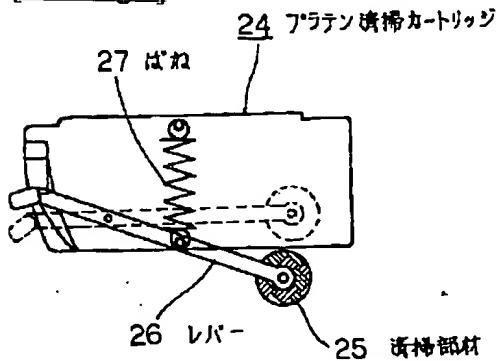
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DRAWINGS

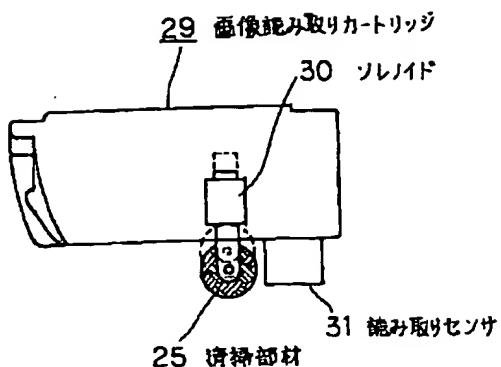
[Drawing 1]



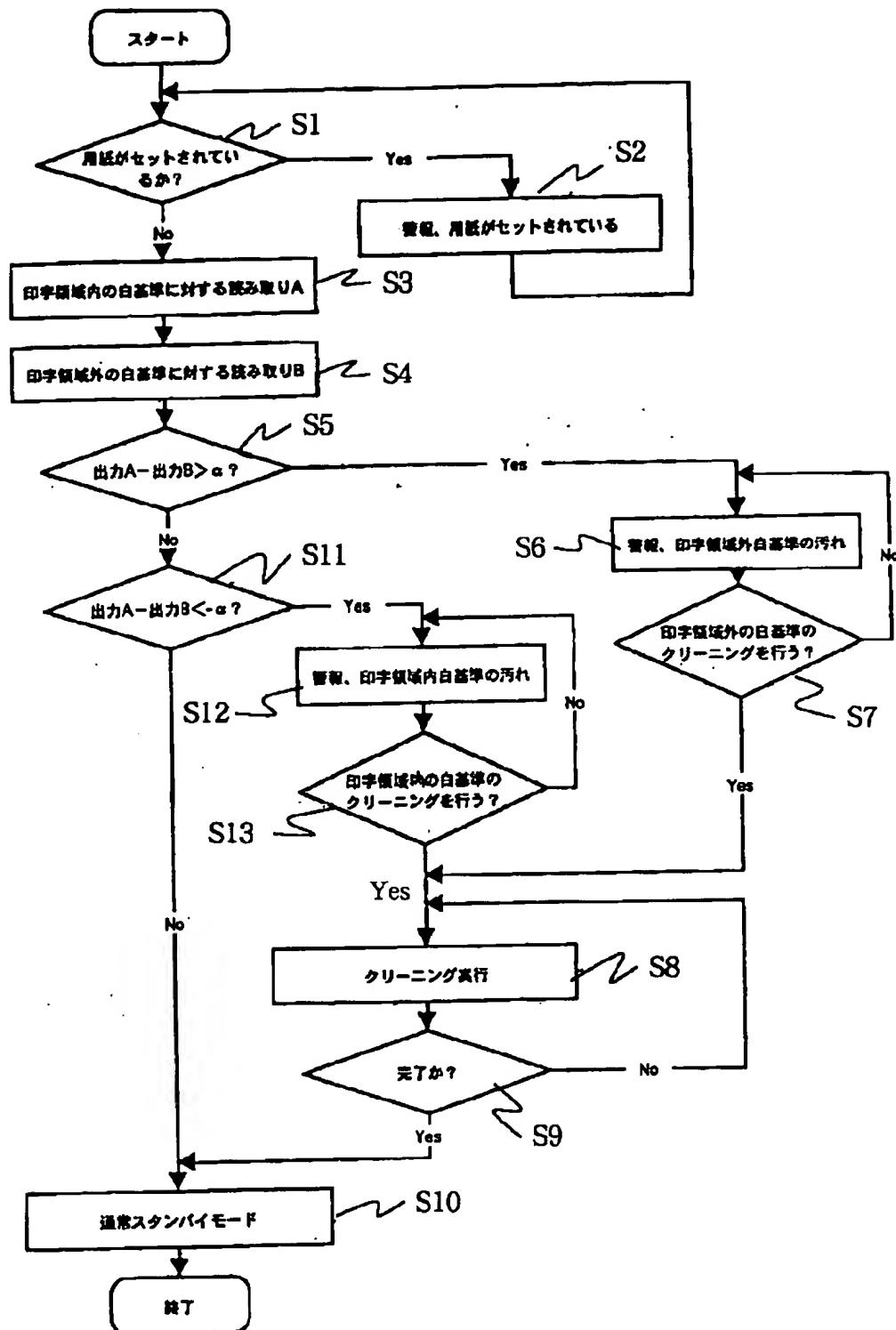
[Drawing 3]



[Drawing 4]



[Drawing 2]



[Translation done.]